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**MIL-STD-2045-14502-3  
July 1994**

**MILITARY STANDARD**

**INFORMATION TECHNOLOGY**

**DOD STANDARDIZED TRANSPORT PROFILE**

**INTERNET TRANSPORT PROFILE**

**FOR DOD COMMUNICATIONS**

**Part 3: Wide Area Network Access**



AMSC N/A

AREA DCPS

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### **Foreword**

This military standard is approved for use by all Departments and Agencies of the Department of Defense (DOD).

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this MIL-STD should be addressed to the:

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by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this MIL-STD or by memorandum.

This MIL-STD 2045-17503 series Defense Standardized Profile (DSP) is a functional standard produced by the Data Communications Protocol Standards (DCPS) Technical Management Panel (DTMP). DTMP functional standards are functional groupings of base standards. Referenced base standards may be commercial, DOD or de facto standards, although International Standards (produced by ISO, CCITT (now ITU-T), and other bodies) are preferred when possible.

This Defense Standardized Profile (DSP) is a functional DOD Data Communications Protocol Standard (DCPS) produced by the DCPS Technical Management Panel (DTMP). The MIL-STD-2045 document series was established within the DCPS Standardization Area to allow for the enhancement of commercial standards or the development of standards that are unique to DOD.

The MIL-STD-2045-10000 series, MIL-STD-2045-10000 to MIL-STD-2045-19999 inclusive, will be used to describe how DOD will implement commercial, international, national, federal, or military standards within the functional profile concept to provide required network services. The Government Open Systems Interconnection Profiles (GOSIP) will serve as the base for developing the 10000 series with DOD enhancements, unique military standards, and interim standards being used only when necessary.

The MIL-STD-2045-20000 series, MIL-STD-2045-20000 to MIL-STD-2045-29999 inclusive, will be used to describe DOD enhancements and extensions to existing commercial, international, national, or federal standards.

The MIL-STD-2045-30000 series, MIL-STD-2045-30000 to MIL-STD-2045-39999 inclusive, will be used to describe protocols and services unique to DOD that will not be supported by commercial, international, national, or federal standards.

The MIL-STD-2045-40000 series, MIL-STD-2045-40000 to MIL-STD-2045-49999 inclusive, will be used to document interim standards. Interim standards document protocols and services needed by DOD until these protocols and services are described in either a GOSIP or a MIL-STD-2045-20000 or -30000 series standard.

The MIL-STD-2045-50000 series, MIL-STD-2045-50000 to MIL-STD-2045-59999 inclusive, will be used to describe how DOD will implement commercial, international, national, federal, or military standards within the functional profile concept to provide required network services. The Government Open Systems Interconnection Profiles (GOSIP) will serve as the base for developing the 50000 series with DOD enhancements, unique military standards, and interim standards being used only when necessary. The difference between MIL-STD-2045-10000 series and the MIL-STD-2045-50000 series is that the 50000 series are interim profiles

Specific details and instructions for establishing a MIL-STD-2045 document, as well as profile development guidelines, are documented in MIL-HDBK-829. DTMP Working Groups shall be responsible for DSP development and informal Service or Agency coordination; the DTMP Plenary shall be responsible for final review and approval.

This document is part of a set of interim DoD data communications protocol profiles based on the Internet protocol

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suite and is intended to support the interoperability of DoD communication networks, including connectivity with the Defense Data Network (DDN).

This part of MIL-STD 2045-14502 contains one normative and one informative annex:

Annex A (normative) DSPICS REQUIREMENTS LIST (DPRL)  
Annex B (informative) CONCLUDING MATERIAL

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## **Introduction**

This DSP is defined within the context of functional standardization, according to the principles specified by ISO/IEC TR 10000, "Framework and Taxonomy of International Standardized Profiles" and MIL-HDBK-829. The context of functional standardization is one part of the overall field of Information Technology (IT) standardization activities covering base standards, profiles, and registration mechanisms. A profile defines a combination of base standards that perform a specific well-defined Information Technology function. Profiles standardize the selection of options and other variations in the base standards to promote system interoperability.

One of the most important roles for a DSP is to serve as the basis for the development of recognized tests. DSPs also guide implementations in developing systems that fit the needs of the US Department of Defense (DoD). DSPs are produced not simply to 'legitimize' a particular choice of base standards and options, but to promote real system interoperability. The development and widespread acceptance of tests based on this and other DSps is crucial to the successful realization of this goal.

The base standards of this DSP include Request For Comments (RFCs) designated as Official Internet Architecture Board (IAB) standards, other RFCs, and Open Systems Interconnection (OSI) Layer Standards from the OSI Reference Model.

This document is intended to be part of a complete transport profile based on TCP/IP. It specifies an internet connection-mode transport service over an internet connectionless mode network service operating over several types of subnetworks. This transport profile is a multipart profile, of which this is Part 3. Part 3 specifies the subnetwork-dependent requirements for an X.25 network interface.

# Information Technology - Defense Standardized Profile (DSP) - Internet Transport Profiles for DOD Communications - Part 3: Wide Area Network (WAN) Access

## 1 Scope

### 1.1 General

This Defense Standardized Profile (DSP) MIL-STD 2045-14502 applies to end systems operating in the Defense Data Network (DDN). It specifies a combination of layer protocols that collectively provide the Transmission Control Protocol (TCP) over the Internet Protocol (IP) operating over DDN subnetworks. This part of the DSP addresses Layer 1, 2, and 3 requirements for an X.25 interface.

### 1.2 Position Within the Taxonomy

This profile contains requirements for a connection-oriented and a connectionless transport service. It also contains requirements for a connectionless network service.

### 1.3 Scenario

This profile specifies the provision for connectionless or connection-oriented transport service between an end system connected to a subnetwork and another compatible end system through the IP connectionless network service. The compatible end system may use mutually agreed upon access methods contained within this DSP, or may conform to a mutually agreed upon alternative access methods. An end system is compatible only if the suboptions (e.g., TCP) are compatible. This profile contains the subnetwork independent requirements. A complete transport profile requires knowledge of the subnetwork type, access method, circuit type, and service type.

The layer standards that make up this profile are shown in Figure 1.

TRANSPORT LAYER	IAB STD 7 (TCP) IAB STD 6 (UDP)	Internet Transport Group Profile MIL-STD 2045-14502, Part 1
NETWORK LAYER	IAB STD 5 (IP)	
	CCITT X.25 (Packet Layer)	WAN Access MIL-STD 2045-14502, Part 3
DATA LINK LAYER	ISO 7776	
PHYSICAL LAYER	EIA 232D / EIA 530	

**Figure 1. Transport Profile Scenario**

The requirements placed on an End System in the DSP are only those necessary to operate the specified set of protocols. The DSP does not specify the required functions for relays. Such functions are out of scope of this document.

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### 2 References

#### 2.1 Government Documents

##### 2.1.1 Specifications, standards, and handbooks.

The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

MIL-HDBK 829:	July 1994	<i>Guidelines for DOD Standardized Profiles.</i>
MIL-STD-2045-14502-1,	July 1994	<i>Transport and Internet Services</i>
MIL-STD-2045-14502-2,	July 1994	<i>Point-to-Point Links</i>
MIL-STD-2045-14502-4,	July 1994	<i>Local Area Network (LAN) Media Independent Requirements</i>
MIL-STD-2045 14502-5	July 1994	<i>Local Area Network (LAN) Media Dependent Requirements</i>
MIL-STD-2045-14502-6,	July 1994	<i>Combat Net Radio (CNR)</i>

DOD activities may obtain copies of DOD directives through their own publication channels or from the DOD Single Stock Point, Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094. Other federal agencies and the public may purchase copies from the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

Copies of Federal Information Processing Standards (FIPS) are available to Department of Defense activities from the Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120-5099. Others must request copies of FIPS from the National Technical Information Services, 5285 Port Royal, Springfield, VA 22161-2171.

##### 2.1.2 Other Government documents, drawings and publications.

NONE

#### 2.2 Non-Government publications.

The following documents form a part of this document to the extent specified herein. Unless otherwise specified the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation.

##### 2.2.1 Profiles

NONE

##### 2.2.2 Base Standards

ISO 7776:1993 *Information Technology - Data Communication - High Level Data Link Control Procedures - Description of the X.25 LAPB-compatible DTE Data Link Procedure.*

EIA 232D *EIA 232-D, Interface Between Data Terminal Equipment and Data Circuit-Termination Equipment Employing Serial Binary Data Interchange.*

EIA 530 *EIA 530, High Speed 25-Position Interface for Data Terminal Equipment and Data Circuit-Termination Equipment Including Alternative 26-Position Connector.*

##### 2.2.3 Other Non Government documents, drawings, and publications



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ISO 3309:1991	<i>Information Technology - Telecommunications and Information Exchange Between Systems</i> <i>High Level Data Link Control (HDLC) Procedure - Frame Structure.</i>
ISO 4335:1991	<i>Information Technology - Telecommunications and Information Exchange between Systems - High-Level Data Link Control (HDLC) Procedures - Elements of Procedures</i>
CCITT V.24	<i>List of definitions for interchange circuits between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE).</i>
CCITT V.28	<i>Electrical characteristics for unbalanced double-current interchange circuits.</i>
EIA 422-A	<i>Electrical Characteristics of Balanced Voltage Digital Interchange Circuits.</i>
EIA 423-A	<i>Electrical Characteristics of Unbalanced Voltage Digital Interchange Circuits.</i>
ISO 2110	<i>Information Technology - Data Communication - 25-Pole DTE/DCE Interface Connector and Contact Number Assignments.</i>
ISO TR 9577	<i>Information Technology - Telecommunications and Information Exchange between systems - Protocol Identification in the network layer, 1990 (E) 1990-10-15.</i>
ISO TR-10000	<i>Information Technology - Framework and Taxonomy of International Standardized Profiles.</i>
FIPS Pub 100/ FED-STD-1041 July 1993	<i>Interface Between Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for Operation with Packet-Switched Data Communications Networks.</i>
ISO/IEC 8208:	<i>Information Technology - Data Communications - X.25 Packet Level Protocol for Terminal Equipment.</i> <span style="float: right;"><i>Data</i></span>

### 2.3 Order of precedence

In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3 Definitions

For the purposes of this DSP, the following terms have the meanings stated in DOD Standardized Profile Guidelines (ref. 2.4 (a)):

- (a) Base Standard.
- (b) DOD Protocol Implementation Conformance Statement (DPICS).
- (c) DOD Standardized Profile (DSP).
- (d) DOD Standardized Profile Implementation Conformance Statement (DSPICS).
- (e) DSPICS Requirements List (DPRL).

The following terms are additionally defined for the purposes of this DSP:

**Internet Architecture Board (IAB) Standard (STD):** The IAB has established this as an official standard protocol for the Internet. These protocols are assigned STD numbers.

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**Request For Comments (RFCs):** RFCs are the working notes of the "Network Working Group," that is the Internet research and development community.

Note: All Internet standards are published as RFCs, but not all RFCs specify standards.

### **4 Abbreviations and Acronyms**

IAB	Internet Architecture Board
RFC	Request For Comments
STD	Standard
TCP	Transmission Control Protocol
UDP	User Datagram Protocol

### **5 Requirements**

#### **5.1 General Requirements**

A conforming implementation of MIL-STD 2045-14502 shall be unconditionally compliant and therefore shall satisfy all the "must" and all the "should" requirements of the reference base standards and shall not implement any capability that has been identified by the base standards as "should not". The following requirements shall be implemented.

- (a) All requirements in the remainder of this section 5.
- (b) All mandatory requirements of the base standards referenced by this DSP.
- (c) All the constraints specified in Annex A (normative), DPRL.

#### **5.2 Network Layer Requirements**

##### **5.2.1 Static Conformance Requirements**

A conforming implementation must use protocol demultiplexing in accordance with ISO/IEC TR 9577. IP datagrams are to be sent as X.25 complete packet sequences using a NLPID value of CC (hex) to denote IP encapsulation.

##### **5.2.2 Dynamic Conformance Requirements**

There is no change in the dynamic conformance requirements.

#### **5.3 Data Link Requirements**

A conforming implementation of MIL-STD 2045-14502 shall satisfy the conformance requirements of ISO/IEC DIS 7776.

##### **5.3.1 Static Conformance Requirements**

This section contains a defined set of services and performing functions of the High Level Data Link Control (HDLC)-Link Access Procedures Balanced (LAPB), ISO/IEC DIS 7776.

### **5.3.1.1 Major Capabilities**

The implementation shall support the single link procedure. The multi-link procedure shall be excluded.

The LAPB protocol shall be used for DTE/DCE operation. It may also be used for DTE/DTE operation. Address assignment information shall be defined as follows:

- (a) DTE = Address A (=11000000).
- (b) DCE = Address B (=10000000).
- (c) As determined by a prior agreement, one of the DTEs shall use the DCE address.

### **5.3.1.2 Basic Operations**

The sequence number shall be modulo-8 for a link established using a SABM command, and modulo-128 for a link established with a SABME command.

### **5.3.1.3 Information Transfer**

Checkpoint recovery shall be initiated by I frames transmitted with the Poll (P) bit set to 1. A station shall support reception and correctly interpret REJ frames.

### **5.3.1.4 Framing**

A station shall send only octet aligned frames. Receipt of non-octet aligned frames shall be considered invalid and discarded.

The flag sequence shall consist of the binary sequence 01111110. A flag that terminates one frame may be used to signal the start of next frame.

For synchronous transmission, a frame shall be aborted by transmitting at least 7 contiguous 1 bits.

### **5.3.1.5 Timers**

T1 timer recovery shall be supported upon transmission of REJ frames.

## **5.3.2 Dynamic Conformance Requirements**

A station, upon receipt of any out of sequence I frames, shall initiate REJ recovery.

## **5.4 Physical Layer Requirements**

A conforming implementation of MIL-STD 2045-14502 shall satisfy the conformance requirements of EIA 232D and EIA 530. Other non-standard physical interfaces are allowable as long they are functionally equivalent to either EIA 232D or EIA 530.

### **5.4.1 Static Conformance Requirements**

There is no change in the static conformance requirements for EIA 232D and EIA 530.

**5.4.2                      Dynamic Conformance Requirements**

There is no change in the dynamic conformance requirements for EIA 232D and EIA 530.

## ANNEX A (normative)

### DSPICS REQUIREMENTS LIST (DPRL)

#### A.1 Introduction

This document provides the DSPICS Requirements List (DPRL) for implementations of the Defense Standardized Profile (DSP) 2045-14502. The DSPICS for an implementation is generated by completing the DPRL in accordance with the instructions given below.

An implementation shall satisfy the mandatory conformance requirements of the base standards referenced in this profile.

A completed DPRL is called the DSPICS for the implementation in question. The DSPICS is a statement of which capabilities and options of the protocol have been implemented. The following can use the DSPICS:

- (a) the protocol implementor, as a check-list to reduce the risk of failure to conform to the standard through oversight.
- (b) the supplier and acquirer - or potential acquirer - of the implementation, as a detailed indication of the capabilities of the implementation, stated relative to the common basis for understanding provided by the standard DSPICS proforma.
- (c) the user - or potential user - of the implementation, as a basis for initially checking the possibility of interworking with another implementation (note that, while interworking can never be guaranteed, failure to internetwork can often be predicted from incompatible DSPICSs).
- (d) a protocol tester, as the basis for selecting appropriate tests against which to assess the claim for conformance of the implementation.

#### A.1.1 Notation

The following notations and symbols from MIL-HDBK 829, which references ISO/IEC TR 10000-1 and -2, are used in the DPRL to indicate the status of features:

##### Status Symbols

- m - mandatory.
- m.<n> - support of every item of the group labeled by the same numeral <n> required, but only one is active at a time.
- o - optional.
- o.<n> - optional, but support of at least one of the group of options labeled by the same numeral <n> is required.
- c - conditional.
- - non-applicable (i.e. logically impossible in the scope of the profile).
- x - excluded or prohibited.
- i - out of scope of profile (left as an implementation choice).

In addition, the symbol "€" is used to indicate an option whose status is not constrained by the profile (status in the base standard). The o.<n> notation is used to show a set of selectable options (i.e., one or more of the set must be implemented) with the same identifier <n>.

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Two character combinations may be used for dynamic conformance requirements. In this case, the first character refers to the static (implementation) status, and the second refers to the dynamic (use); thus 'mo' means "mandatory to be implemented, optional to be used."

### Notations for Conditional Status

The following predicate notation is used:

<predicate>:: This notation introduces a group of items, all of which are conditional on <predicate>.

<predicate>: This notation introduces a single item which is conditional on <predicate>.

In each case, the predicate may identify a profile feature, or a boolean combination of predicates. ("^" is the symbol for logical negation).

<index>: This predicate symbol means that the status following it applies only when the DPICS states that the features identified by the index is supported. In the simplest case, <index> is the identifying tag of a single DPICS items. <index> also may be a Boolean expression composed of several indices.

<index>:: When this group predicate is true, the associated clause should be completed.

### Notations used in the Protocol Feature Column

<r> Symbol used to denote the receiving system.

<t> Symbol used to denote the transmitting system.

### Support Column Symbols

The support of every item as claimed by the implementor is stated by circling the appropriate answer (either Yes, No or N/A) in the support column:

Yes	Supported by the implementation.
No	Not supported by the implementation.
N/A	Not applicable.

Base standard requirements are shown using the equivalent notations in upper case (e.g., M, O, X).

## A.1.2 Footnotes

Footnotes to the proforma are indicated by superscript numerals. The footnote appears on the page of the first occurrence of the numeral. Subsequent occurrences of a numeral refer to the footnote of the first occurrence.

## A.1.3 Instructions for Completing the DPRL

A DSP implementor shows the extent of compliance to a DSP by completing the DPRL; that is, compliance to all mandatory requirements and the options that are not supported are shown. The resulting completed DPRL is called a DSPICS. Where this profile refines the features of the base standards, the requirements expressed in this DPRL shall be applied (as indicated in DPRL items with no "Profile Support" column) to constrain the allowable responses in the base standard DPICS proforma. When this profile makes additional requirements, the "Profile Support" column for such DPRLs shall be completed. In this column, each response either shall be selected from the indicated set of responses, or comprise one or more parameter values as requested. For an inapplicable conditional requirement, a Not Applicable (NA) check-box is provided. If a mandatory requirement is not satisfied, exception information must be supplied by entering a reference Xi, where i is a unique identifier, to an accompanying rationale for the noncompliance. When the profile requirement is expressed as a two-character combination (as defined in A.1.1 above), then the response shall address each element of the requirement; e.g., for the requirement "mo," the possible compliant responses are "yy" or "yn."

## A.2 Standards Referenced

This profile specifies the provision of TCP service in an End System from which a standardized IP network service

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operating over a X.25 interface is available (or can be made available). It uses the following standards:

CCITT X.25	X.25 Packet Layer Protocol
ISO 7776	Data Link Layer Protocol
EIA 530/EIA 232D	Physical Layer Specification

### A.3 DSPICS Requirements List

#### A.3.1 General Information

##### A.3.1.1 Implementation Identification

Supplier	
Contact point for queries about the profile	
Implementation Name(s) and Version(s)	
Date of statement	
Other Information: Machine Name, Operating Systems, System Name	

##### A.3.1.2 Protocols

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
X25	Packet Layer Protocol	CCITT X.25			m	Yes
XINT	DDN X.25 Standard Interface	DDN X.25			m	Yes
XBINT	DDN X.25 Basic Interface	DDN X.25			x	
LAPB	Link Access Procedures - Balanced	ISO 7776			m	Yes
RS	EIA 232-D, EIA 530, or Functionally Equivalent Physical Interface	EIA 232D EIA 530			m	Yes

#### A.3.2 Network Layer

This section uses ISO/IEC 8208 as a guideline, but lists the CCITT X.25 requirements. It forms a basis for a PICS Proforma for the CCITT X.25 Recommendation.

**A.3.2.1 Packet Layer****A.3.2.1.1 Type of Service**

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
VC	Virtual Circuit	CCITT X.25 :4	O.1		o.1	Yes No
PVC	Permanent Virtual Circuit	CCITT X.25 :4	O.1		o.1	Yes No

**A.3.2.1.2 Optional User Facilities Assigned for an Agreed Contractual Period**

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
EXFS	Extended Frame Sequence Numbering	CCITT X.25 : 6.2	O		o	Yes No
MLKP	Multilink Procedure	CCITT X.25 : 2.5	O		x	Yes No
OLFR	Online Facility Registration	CCITT X.25 : 6.1	O		VC:o	Yes No N/A
M128	Extended Packet Sequence Numbering (modulo 128)	CCITT X.25 : 6.2	O		o	Yes No
DBIT	D-bit Modification	CCITT X.25 : 6.3	O		o	Yes No
RXMT	Packet Retransmission	CCITT X.25 : 6.4	O		o	Yes No
INBAR	Incoming Calls Barred	CCITT X.25 : 6.5	VC:M		VC:o	Yes N/A
OBAR	Outgoing Calls Barred	CCITT X.25 : 6.6	VC:M		VC:o	Yes N/A
LCNO	One-way Logical Channel Outgoing	CCITT X.25 : 6.7	VC:M		VC:o	Yes N/A
LCNI	One-way Logical Channel Incoming	CCITT X.25 : 6.8	VC:O		VC:O	Yes No N/A
DPKT	Nonstandard Default Packet Sizes (14, 32, 64, 256, 512, 1024, 2048, 4096)	CCITT X.25 : 6.9	O		o	Yes No



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Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
DWIN	Nonstandard Default Window Sizes	CCITT X.25 : 6.10	O		o	Yes No
DTH	Default Throughput Classes Assignment	CCITT X.25 : 6.11	O		o	Yes No
FCP	Flow Control Parameter Negotiation	CCITT X.25 : 6.12	VC:M		VC:m	Yes N/A
TCN	Throughput Class Negotiation	CCITT X.25 : 6.13	VC:M		VC:m	Yes N/A
CUG	Closed User Group	CCITT X.25 : 6.14.1	VC:M		VC:m	Yes N/A
CUGO	Closed User Groups with Outgoing Access	CCITT X.25 : 6.14.2	VC:O		VC:o	Yes No N/A
CUGI	Closed User Groups with Incoming Access	CCITT X.25 : 6.14.3	VC:O		VC:o	Yes No N/A
IBCU	Incoming Calls Barred within a Closed User Group	CCITT X.25 : 6.14.4	VC:O		VC:o	Yes No N/A
OBCU	Outgoing Calls Barred within a Closed User Group	CCITT X.25 : 6.14.5	VC:O		VC:o	Yes No N/A
BCU	Bilateral Closed User Group	CCITT X.25 : 6.15.1	VC:O		VC:o	Yes No N/A
BCUO	Bilateral Closed User Group with Outgoing Access	CCITT X.25 : 6.15.2	VC:O		VC:o	Yes No N/A
FSA	Fast Select Acceptance	CCITT X.25 : 6.17	VC:M		XBINT:o	Yes N/A
RCA	Reverse Charging Acceptance	CCITT X.25 : 6.19	VC:O		VC:o	Yes No N/A
LCP	Local Charging Prevention	CCITT X.25 : 6.20	VC:O		VC:o	Yes No N/A
NID	Network User Identification	CCITT X.25 : 6.21	VC:O		VC:o	Yes No N/A
CHI	Charging Information	CCITT X.25 : 6.22	VC:O		VC:o	Yes No N/A
RPOA	RPOA Related Facilities	CCITT X.25 : 6.23	i		i	N/A

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Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
HGR	Hunt Group	CCITTX.25 : 6.24	VC:O		VC:o	Yes No N/A
CRDR	Call Redirection	CCITTX.25 : 6.25	VC:O		VC:o	Yes No N/A
DIRC	Direct Call		VC:O		VC:o	Yes No N/A

### A.3.2.1.3 Optional User Facilities On a Per-call Basis

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
FCNp	Flow Control Parameter Negotiation	CCITTX.25 : 6.12	O		o	Yes No
TCNp	Throughput Class Negotiation	CCITTX.25 : 6.13	O		o	Yes No
CUGp	Closed User Group Selection	CCITTX.25 : 6.14.6	O		o	Yes No
CUGIp	Closed User Group with Outgoing Access Selection	CCITTX.25 : 6.14.7	O		o	Yes No
BCUp	Bilateral Closed User Group Selection	CCITTX.25 : 6.15.3	O		o	Yes no
FSp	Fast Select	CCITTX.25 : 6.16	O		XBINT:o	Yes no
ICp	Reverse Charging	CCITTX.25 : 6.18	O		o	Yes No
NIDp	Network User Identification	CCITTX.25 : 6.21	O		o	Yes No
Clp	Charging Information	CCITTX.25 : 6.22	O		o	Yes No
BRSp	Basic RPOA Selection	CCITTX.25 : 6.23	O		i	Yes No
ERSp	Extended RPOA Selection	CCITTX.25 : 6.23	O		i	Yes No
CLAp	Called Line Address Modified Notification	CCITTX.25 : 6.26	O		o	Yes No

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Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
CRNp	Call Redirection Notification	CCITTX.25 : 6.25.3	O		o	Yes No
TDp	Transit Delay Selection And Indication	CCITTX.25 : 6.27	O		o	Yes No
AACp	Abbreviated Address Calling		O		o	Yes no

### A.3.3 Data Link Layer

The Data Link layer DPRL must be used with the PICS proforma for the base standard, ISO/IEC DIS 7776:1993, since only those features refined in the profile are included.

#### A.3.3.1 Major Capabilities (A.5)

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
Ls	Single Link Procedure	1	M	5.3.1.1	m	Yes
Lm	Multi-link procedure	6	O	5.3.1.1	x	No
	DTE/DCE or DTE/DTE Operation					
Lt	DTE/DTE Operation	1	O	5.3.1.1	o	Yes
	If DTE/DCE operation is supported:					
Lta	Assignment of 'A' and 'B' Addresses as for a DCE	1	O	5.3.1.1	m	Yes

#### A.3.3.2 Single link procedure: basic/extended operation and transmission environments (A.6.1)

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
	Frame Format:					
M8	Basic (Modulo 8)	3	O.1	5.3.1.2.	m	Yes
M128	Extended (Modulo 128)	3	O.1		o	Yes
Tsy	Synchronous transmission	3.5.1, 3.8.1, 3.9.1, 3.10.1, 3.11.1	O.2		o	Yes No

**A.3.3.3 Single Link procedure: information transfer (A.6.3)**

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
	Support of Information Transfer					
	Does the DTE support checkpoint recovery, initiated by transmitting?:	4.4.2.1				
ITCi	I frames with P=1.		O.5	5.3.1.3	m	Yes
ITCs	Supervisory frames with P=1.		O.5		o	Yes No
ITRJ	I frame retransmission on receipt of REJ frames	4.4.2.2, 5.4.6	M	5.3.1.3	m	Yes
IRRJ	Initiation of REJ recovery on out-of-sequence I frames	4.4.2.2 5.4.4	M	5.3.2	mo	Yes No
	Maximum information field size 1031 octets (8248 bits)	4.3.9 5.7.3	M		m	Yes

**A.3.3.4 Single link procedures: frame formats (A.6.4)**

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
F1a	Is the DTE capable of sending non-octet aligned frames?	3.8	O	5.3.1.4	x	No
	Does receipt of non-octet aligned frames cause:					
F1b	Discard of frame as invalid?	3.8, 5.4c.3	O.2	5.3.1.4	m	Yes
F1c	Acceptance of frame as valid?	3.8, 5.4.3	O.2		x	No
F4	Does the DTE generate a single flag to be used as both the closing flag for one frame and an the opening flag for the next?	3.1	O	5.3.1.4	m	Yes
FAa	Is frame abortion supported for transmitted frames?	3.9	O	5.3.1.4	m	Yes

**A.3.3.5 Single link procedure: timers (A.6.5)**

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
	Does DTE support Timer T1 recovery for the following frames sent?:					
T1e	REJ	4.4.2.2	O	5.3.1.5	m	Yes

### A.3.4 DTE/DCE Physical Interface

This section references EIA 232D, EIA 530 and other related standards.

#### A.3.4.1 General

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
	Interface Type:					
I1	- EIA 232D		O.1	5.4	o.1	Yes No
I2	- EIA 530		O.1	5.4	o.1	Yes No
I3	- Other Functionally Similar Physical Interface		O.1	5.4	o.1	Yes No
	Subnetwork access type:					
SN1 SN2	- Leased/Dedicated line - Switched network service	1.6	O		m	Yes
	Physical Interface:					
PI1 PI2	- V-series - X.21 bis leased circuit service	V.32, V.36 X.21 bis § 5.2	SN1:M SN2:M		SN1:m SN2:m	Yes
SR0 SR1 SR2	Data signalling rates: - From 0 to 20 Kbps - From 20 Kbps to 2 Mbps - From 2 Mbps to 10 Mbps	1.3	I1:M I2:O.2 I2:O.2		I1:m I2:o.2 I2:o.2	Yes N/A Yes No Yes No
Sy NSy	Type of data communication: - Synchronous - Non-synchronous	1.5	O.3 O.3		PI1:m PI2:m	Yes Yes
	Electrical Characteristics:					
V28 V10 V11	- V.28 - EIA 423A - EIA 422A	V.28 EIA 423A EIA 422A	SR0:O.4 SR1:O.4 SR2:O.4		SR0:o.3 SR1:o.3 SR2:o.3	Yes No Yes No Yes No
DB25	Connector - DB25	ISO 2110	M		m	Yes

**A.3.4.2 EIA 232D Interchange Circuits<sup>1</sup> (I1::)**

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
AA	pin 1 - Protective Ground (101)	3.3, 2.2	O		m	Yes
BA	pin 2 - Transmitted Data (103)	3.3, 4.4	M		m	Yes
BB	pin 3 - Received Data (104)	3.3, 4.4	M		m	Yes
CA	pin 4 - Request to Send (105)	3.3, 4.4	M		m	Yes
CB	pin 5 - Clear to Send (106)	3.3, 4.4	M		m	Yes
CC	pin 6 - Data Set Ready (107)	3.3, 4.4	M		m	Yes
AB	pin 7 - Signal Ground/Common Return (102)	3.3, 4.4	M		m	Yes
CF	pin 8 - Received Line Signal Detector (109)	3.3, 4.4	M		m	Yes
SCF	pin 12 - Secondary Received Line Signal Detector(122)	3.3, 4.4	O		o	Yes No
SCB	pin 13 - Secondary Clear to Send (121)	3.3, 4.4	O		o	Yes No
SBA	pin 14 - Secondary Transmitted Data (118)	3.3, 4.4	O		o	Yes No
DB	pin 15 - Transmission Signal Element Timing, DCE (114)	3.3, 4.4	Sy:M else:O		m	Yes
SBB	pin 16 - Secondary Received Data (119)	3.3, 4.4	O		o	Yes No
DD	pin 17 - Receiver Signal Element Timing, DCE source (115)	3.3, 4.4	Sy:M		Sy:m else:o	Yes No
SCA	pin 19 - Secondary Request to Send (120)	3.3, 4.4	O		o	Yes No
CD	pin 20 - Data Terminal Ready (108)	3.3, 4.4	SN2:M else:O		SN2:m else:o	Yes
CG	pin 21 - Signal Quality Detector (110)	3.3, 4.4	O		o	Yes No
CE	pin 22 - Ring Indicator (125)	3.3, 4.4	SN2:M else:O		SN2:m else:o	Yes No
CH/CI	pin 23 - Data Signal Rate Selector (111)	3.3, 4.4	O		o	Yes No
DA	pin 24 - Transmit Signal Element Timing, DTE source (113)	3.3, 4.4	Sy:M		Sy:m else:o	Yes No
RD	pin 9,10 - Reserved for Data Set Testing	3.3	O		o	Yes No
RL	pin 21 - Remote Loopback (140)	3.3, 4.4	O		o	Yes No
LL	pin 18 - Local Loopback (141)	3.3	O		o	Yes No
TM	pin 25 - Test Mode (142)	3.3	O		o	Yes No
UN	pin 11 - Unassigned	3.3	O		o	Yes No

Note 1: The CCITT V.24 equivalent assignment numbers are given in parentheses.

Note 2: If SCF is not used, CI is assigned to pin 12.

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## A.3.4.3 EIA 530 Interchange Circuits<sup>3</sup> (I2::)

Item	Protocol Feature	Base Standard		Profile		Supported
		Reference	Status	Clause	Status	
	pin 1 - Shield	2.3, 3.4	M		m	Yes
BA	pin 2 - Transmitted Data A (103) pin 14 - Transmitted Data B	3.4, 4.3.2	M		m	Yes
BB	pin 3 - Received Data A (104) pin 16 - Received Data B	3.4, 4.3.3	M		m	Yes
CA	pin 4 - Request to Send A (105) pin 19 - Request to Send B	3.4, 4.3.4	M		m	Yes
CB	pin 5 - Clear to Send A (106) pin 13 - Clear to Send B	3.4, 4.3.5	M		m	Yes
CC	pin 6 - Data Set Ready DCE A (107) pin 22 - Data Set Ready DCE B	3.4, 4.3.6	M		m	Yes
CD	pin 20 - Data set Ready DTE A (108) pin 23 - Data set Ready DTE B	3.4, 4.3.7	M		m	Yes
AB	pin 7 - Signal Ground/Common Return (102)	3.4, 4.3.1	M		m	Yes
CF	pin 8 - Received Line Signal Detector A(109) pin 10 - Received Line Signal Detector B	3.4, 4.3.9	M		m	Yes
DA	pin 24 - Transmit Signal Element Timing A,DTE (113) pin 11 - Transmit Signal Element Timing B,DTE	3.4, 4.3.14	Sy:M else:O		Sy:m else:o	Yes
DB	pin 15 - Transmit Signal Element Timing A,DCE (114) pin 12 - Transmit Signal Element Timing B,DCE	3.4, 4.3.15	Sy:M else:O		Sy:m else:o	Yes
DD	pin 17 - Receiver Signal Element Timing A, DCE source (115) pin 9 - Receiver Signal Element Timing B, DCE source	3.4, 4.3.16	Sy:M else:O		Sy:m else:o	Yes
RL	pin 21 - Remote Loopback (140)	3.4, 4.3.12	O		o	Yes No
LL	pin 18 - Local Loopback (141)	3.4, 4.3.11	O		o	Yes No
TM	pin 25 - Test Mode (142)	3.4, 4.3.13	O		o	Yes No

<sup>3</sup> The CCITT V.24 equivalent assignment numbers are given in parentheses.

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## ANNEX B (informative)

### CONCLUDING MATERIAL

#### B.1 Deviations from the Base Standards

This MIL-STD documents the base standard protocols in the ISO/IEC TR 10000, Framework and Taxonomy of International Standardized Profiles and MIL-HDBK-829 format. This DSP does not deviate from the protocol as written in the RFC base standards.

The classification of the requirements in the RFCs have been changed in the DSPICS to the following:

<u>RFC</u>	<u>MIL-STD</u>
MUST	Mandatory
SHOULD	Mandatory
MAY	Optional
SHOULD NOT	Prohibited
MUST NOT	Prohibited

#### B.2 Subject Term (Keyword) Listing

Single Link Procedure  
X.25  
DCE  
DTE  
HDLC  
ISDN  
Multiprotocol Interconnect  
RFC  
RFC 1356  
ISO 8208  
Link Access Procedure, Balanced  
LAPB

#### B.3 Preparing Activity:

Defense Information Systems Agency (DISA) - DC  
Project: DCPS-0013

#### B.4 Reviewing Activity:

Army	SC, PT
Air Force	13, 17, 29, 33, 90
DLA	DH
DMA	MP
DIA	DI
DOT	OST
NSA	NS
OASD	2IQ, DO, IR
ODISC4 AC	
NAVY	CH, ND, TD, OM
USMC	MC, CG

#### B.5 Custodians:



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DISA:	DC
Army:	SC
Air Force:	90
Navy:	OM
DIA:	DI
NSA:	NS
USMC:	MC
DLA:	DH
Other:	Joint Staff/Architecture & Integration USSPACECOM

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